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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,034	07/19/2004	Christian Peter Behrenbruch	13615PCTUS	8699

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EXAMINER

LEE, JOHN W

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/502,034	Applicant(s) BEHRENBRUCH ET AL.	
	Examiner John Wahnkyo Lee	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20040719, 20050321</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. An initialed and dated copy of Applicant's IDS form 1449, Paper No. 20040719 and 20050321, are attached to the instant Office action.

Specification

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 recites the limitation "visually distinguishable overlay" in the second line of the claim. There is insufficient antecedent basis for this limitation in the claim. From following the logic and the claim limitations from the previous claims, it will be appropriate if claim 14 is a dependent claim of claim 9. For the further examination, the examiner will consider claim 14 as a dependent claim of claim 9.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Regarding claim 18, the claims are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In accordance with applicant's specification, the phrases "programmed computer" and "computer-readable storage medium" can include a storage or transmission medium encoding the program. Generally, transmission medium encoding a program can even include networks sending bit streams or antennas receiving and transmitting signals or carrier waves. Signals or carrier waves are forms of energy per se and do not fall within a statutory category invention, for energy is clearly not a series of steps or acts to constitute process, not a mechanical device or combination of mechanical devices to constitute a

Art Unit: 2624

machine, not a tangible physical article or object which is some form matter to be a produce and constitute a manufacture, and not a composition of two or more substances to constitute a composition matter.

Claim 19 mirrors and does not overcome the deficiency enumerated for claim 18. Therefore, claim 19 should likewise be rejected as non-statutory.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 7-11, 13, 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avinash et al. (2004/0017935) in view of Novak et al. (2002/0028006).

Regarding claim 1, Avinash discloses a temporal image processing system comprising a temporal processing unit comprising steps of receiving a first and second image signal from a scanning unit (abstract), a segmentation module that isolates at least one region of interest and generates a segmentation signal, and registration module that registers region of interest (page 3, paragraph [0048]) and applies warped and elastic transformation if the regions of interest are large (page 2, paragraph [0024]). Avinash's invention also includes a host computer and a display that data are coupled

to (fig. 2-43; page 2, paragraph [0019]). However, Avinash does not disclose displaying a measure of the confidence, but Novak discloses a pop-up window (fig. 6-600) corresponding to the main window (fig. 5-500) that displaying measurement of the confidence of the segmentation of an object (fig. 6-615; page 2, paragraph [0024]).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Novak's method in Avinash's temporal image comparison method to make it possible for the user to interact easily with rendering the measurement of the segmented object as suggested by Novak (page 4, paragraph [0045]).

Regarding claim 7, Avinash further discloses a user interface and an operator controller that technicians can control. (fig. 2-28, and 29; page 3, paragraph [0039]).

Regarding claims 8 and 13, Novak further discloses a pop-up window that displays the measurement of the confidence and quantitative measurements (fig. 6-600). It is readily apparent that the pop-up window can overlay on the images on the main window and be displayed next to the superimposed images by dragging it on the main window.

Regarding claims 9 and 11, Novak further discloses a main window (fig. 5-500) that has an overlay button (fig. 5-570) and a scroll function for controlling the intensities (fig 5-520, 525).

Regarding claim 10, Avinash further discloses using color look-up tables for the quantitative comparison of the overlaid images and the result combination being realized with a multi-color overlay display (page 3, paragraph [0032]).

Regarding claim 17, Avinash further discloses the invention is related with x-ray and computed tomography systems that are examples of medical application using medical images (page 3, paragraph [0033]).

Regarding claims 18 and 19, Novak further discloses an interactive computer assisted diagnosis system (ICAD) (fig. 1; page 2, paragraph [0028]) that implements Novak's method and comprises CPU (fig. 1-100), ROM (fig. 1-106), and a RAM (fig. 1-108). From the elements of the ICAD system, it is readily apparent that a computer program is used for implementing the method of Novak to be executed by the ICAD system that can be a computer or a computer-readable storage medium.

Regarding claims 20, Avinash's invention also includes a host computer and a display that data are coupled to (fig. 2-43; page 2, paragraph [0019]).

7. Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avinash et al. (2004/0017935) in view of Novak et al. (2002/0028006) and further in view of Shi P et al. ("Volumetric deformation analysis using mechanics-based data fusion: applications in cardiac motion recovery").

Regarding claims 2-4 and 6, Avinash and Novak disclose the claim limitations in claim 1 as discussed before, but not the detail claim limitations of claims 2-4 and 6. However, Shi teaches constructing a match confidence weighted regularization function

to compute dense field motion for all surface points based on LV surface point determined by the local shape between successive surface frames (page 92-93, chapter 2.1.3).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Novak's method and Shi's method in Avinash's temporal image comparison method to assess the goodness and the uniqueness of the matching choices as suggested by Shi (page 93).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avinash et al. (2004/0017935) in view of Novak et al. (2002/0028006) and further in view of Shi P et al. ("Volumetric deformation analysis using mechanics-based data fusion: applications in cardiac motion recovery") and O'Donnell M et al. ("Strain magnitude estimation based on adaptive incompressibility processing").

Regarding claim 5, Avinash, Novak, and Shi disclose and teaches all the limitations in claims 1 and 2 as discussed before, but not the detail claim limitations of claim 5. However, O'Donnell teaches deriving a confidence weight such as the deformation magnitude in a region about the pixel as a predictor of the correlation magnitude (page 1645).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Novak's method, Shi's method, and O'Donnell's method in Avinash's temporal image comparison method to assess the goodness and the uniqueness of the matching choices as suggested by Shi (page 93).

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Avinash et al. (2004/0017935) in view of Novak et al. (2002/0028006) and further in view of Ditt et al. (US 7,110,616).

Regarding claim 12, Avinash and Novak disclose all the limitations in claims 1 and 9 as discussed before, but not the detail claim limitations of claim 11. However, Ditt discloses that one or more gray value ranges can be selected by user-controlled highlighting of one or more markings on the monitor as well as for generating the fusion image with the aid of the selected gray-value ranges (abstract).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Novak's method and Ditt's method in Avinash's temporal image comparison to permit meaningful generation of a fusion image as suggested by Ditt (col. 2, lines 37-40).

10. Claim 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avinash et al. (2004/0017935) in view of Novak et al. (2002/0028006) and further in view of Hsu et al. (US 6,016,442).

Regarding claims 14-16, Avinash and Novak disclose all the limitations in claims 1 and 8 as discussed before, but not the detail claim limitations of claims 14-16. However, Hsu discloses a medical device system and method of plotting symbols representing complexes of selected arrhythmic events that are grouped together within a defined boundary and displayed on an interactive display (fig. 10-600; abstract; col. 3,

Art Unit: 2624

lines 4-7). The defined boundary is draw by the user on the interactive display screen (col.3, lines 8-9). Moreover, the user can select one of the distinct symbols representing at least one arrhythmic episode on the interactive screen (col. 3, lines 37-39).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Novak's method and Hsu's method in Avinash's temporal image comparison to make it possible for the user to quickly assess and interpret the data displayed on the interactive screen as suggested by Hsu (col. 2, lines 16-21).

Conclusion

11. No claims are allowed

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Wahnkyo Lee whose telephone number is (571) 272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John W. Lee
Art Unit 2624



JINGGE WU
SUPERVISORY PATENT EXAMINER